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BOILERS

International Engineering

Catalogue No. 2

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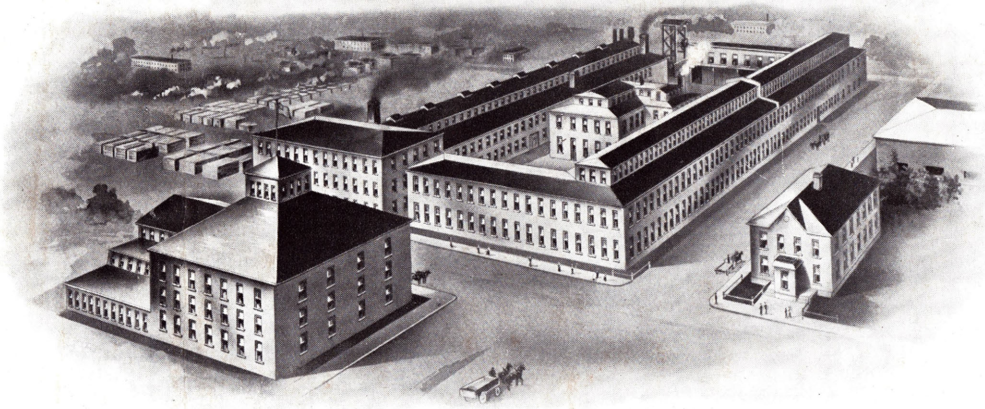
RETURN TO

Boiler

Robb Engineer



Main Office and South Works

The Goldie & McCulloch Co.. Limited, Galt, Ontario, Canada

BOILERS

Illustrated Catalogue
Number 20

RETURN TUBULAR, PORTABLE, VERTICAL, MARINE *and* WATER TUBE BOILERS

The Goldie & McCulloch Co.

GALT · ONTARIO · CANADA
Limited

Western Branch
WINNIPEG, MANITOBA
248 McDermott Ave.

Quebec Agents
ROSS & GREIG
Montreal, Que.

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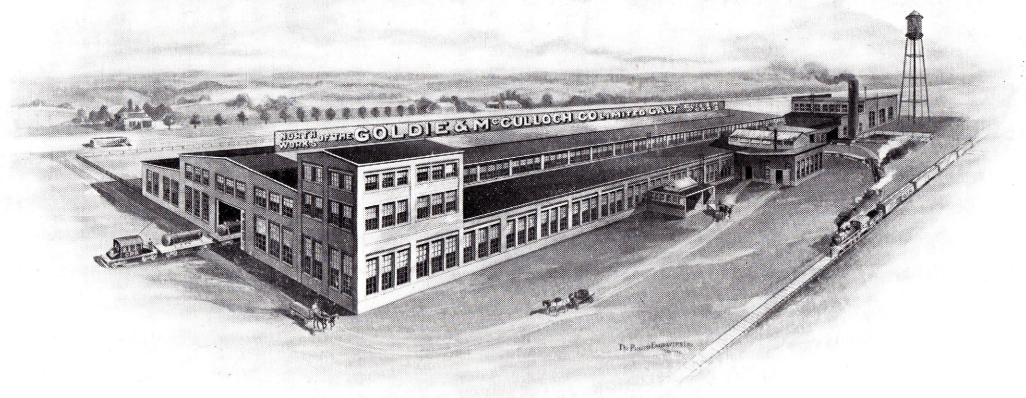

NORTH WORKS OF THE GOLDIE & M^c CULLOCH CO LIMITED GALT
The Photo Engravers Ltd

North Works

DEVOTED ENTIRELY TO THE MANUFACTURE OF BOILERS, HEATERS AND TANKS

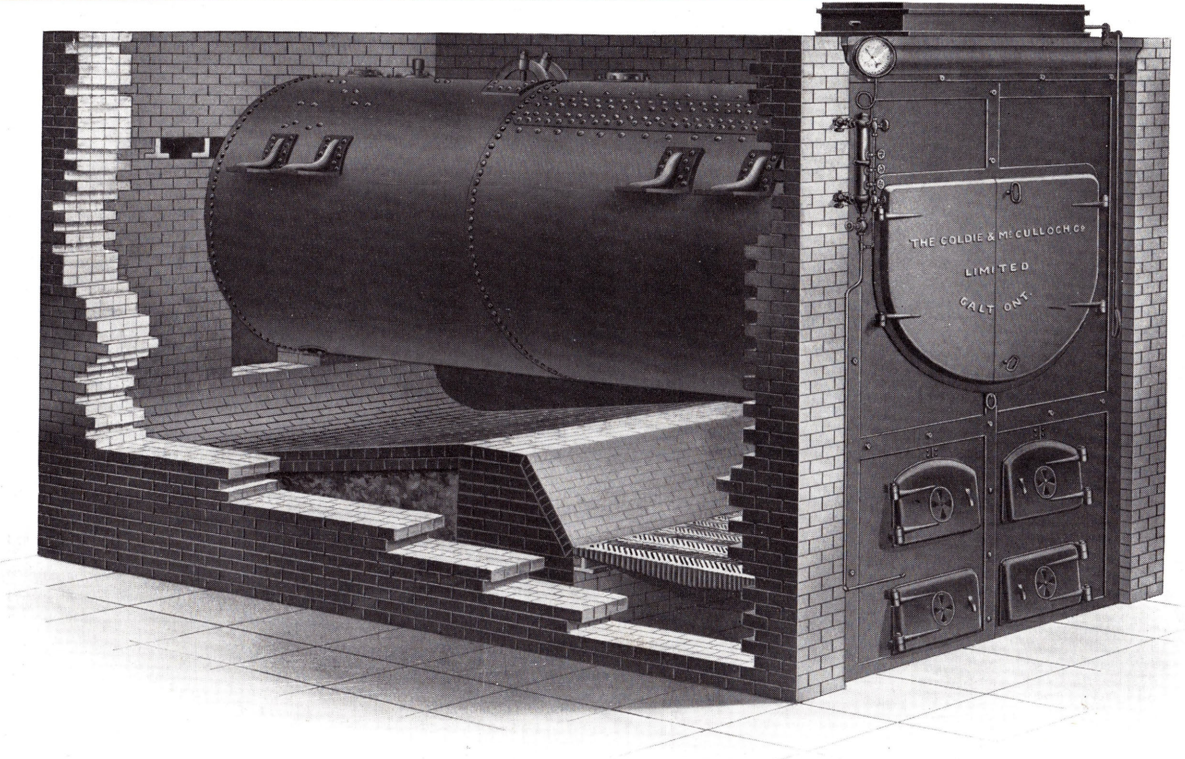
Introduction

WE have pleasure in presenting this Catalogue of Boilers, on the following pages of which we have endeavored by means of illustrations and descriptive matter to place before our patrons as clearly and briefly as possible the principle features and advantages contained in our Boilers.

The illustration on opposite page shows our North Works, which is devoted entirely to the manufacture of Boilers, Heaters, Stacks, and special tank and plate work of all descriptions. This shop is equipped with the latest and best machinery necessary in the manufacture of High Grade Boilers.

We are in a position to look after the needs of our customers promptly and well.

As we are continually making improvements in the designs of our Boilers it is possible that our latest product may differ slighty from some of the illustrations shown.


THE GOLDIE & McCULLOCH Co
LIMITED
GALT ONT

STANDARD BOILER SETTING WITH FULL FLUSH FRONTS.

Boilers 16 feet long and less have two brackets on each side. Boilers over 16 feet long have four brackets on each side.

Return Tubular Boilers

MATERIAL—The material used in the construction of our Boilers is the best quality of flange steel of standard make.

The tubes are either lap welded charcoal iron, or soft steel.

The rivets are mild steel and the stays are the Huston solid pressed steel type.

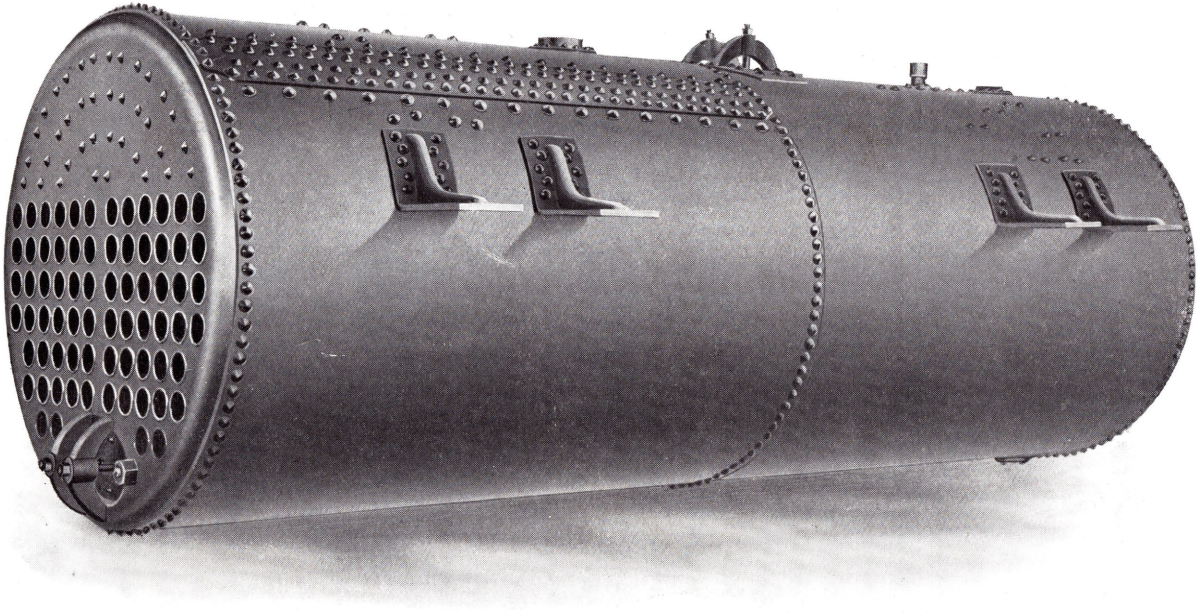
FLANGING—The head sheets are of the best quality of flange steel, and are formed in a hydraulic flanging machine with curves of large radii. Only one heat is taken on each head in turning the flange, thus relieving the head sheet from all strains likely to occur when flanging is done by hand.

TUBE HOLES—Although much more expensive we always drill and never punch the tube holes.

RIVETTING—The rivetting is principally done by a powerful hydraulic rivetter, by which the plates are brought in such close contact that the strain on the rivets is greatly reduced. All Boilers over 36 inches in diameter have the longitudinal seams, double or triple rivetted, double strap butt joints, as the pressure may require.

CAULKING—The seams are caulked with a pneumatic caulking machine, a blunt tool being used to prevent injury to lower plate. The edges of all plates are planed before being rolled.

STAYING—Special attention is given to bracing and staying. All flat surfaces are well and properly stayed with solid steel stays.



18 FOOT STANDARD RETURN TUBULAR BOILER.

All Boilers 18 feet and under are built in two rings.

Return Tubular Boilers

Continued

DOME OR BELL NOZZLE—We now make the return tubular boilers with bell nozzles instead of domes, unless otherwise ordered, as it is considered that the bell nozzle makes a stronger and better boiler. This bell nozzle effectively prevents an excess of moisture being carried with the steam into the steam pipe.

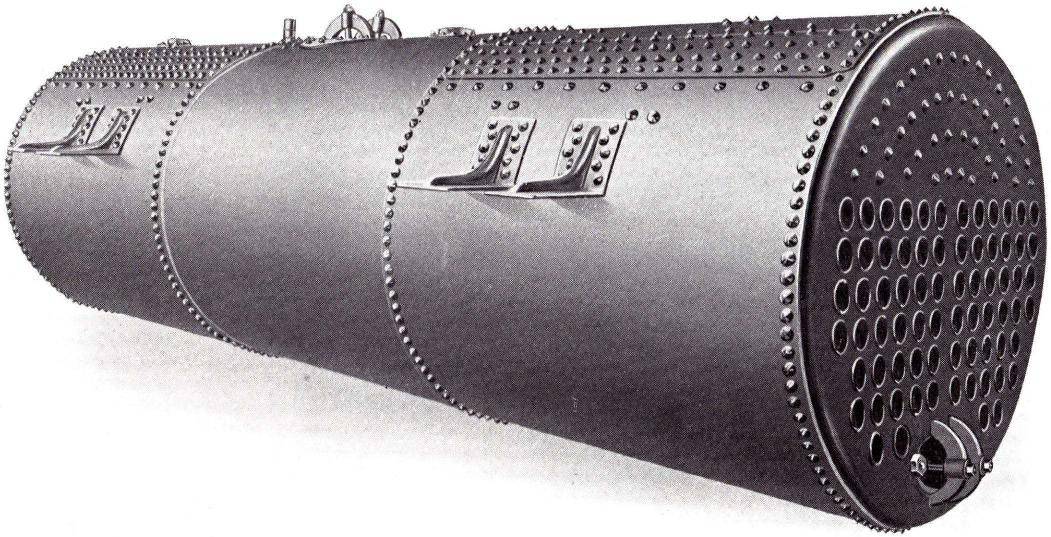
BRACKETS—Boilers are supported by two or four heavy brackets on each side.

FIXTURES AND FITTINGS—With each boiler we include the following fixtures and fittings:—Cast iron boiler front of new and neat design, full flush front or half front as desired; dead plate, centre abutment to support the brick arches over the furnace doors; grate bars and supports; rear door and frame; cast angle bar to support brick arch at back end of boiler; cast iron uptake with damper over boiler front; bracket plates and rollers; anchor bolts for front and rear door frame.

FITTINGS—Pop safety valve, water column with gauge cocks, glass water gauge, steam gauge, blow-off cock and pipe, globe and check valve for feed pipe.

We also furnish with each boiler, when required, a blueprint of brickwork with instructions as to material required.

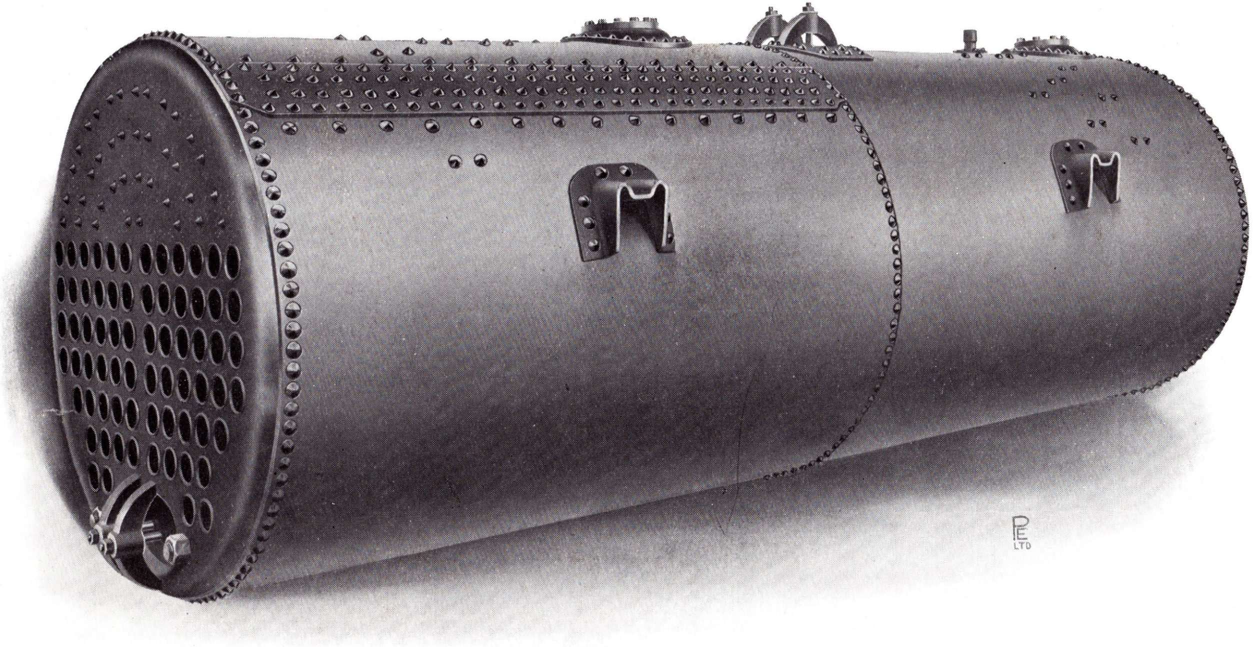
TESTING—Upon completion all boilers are tested to a Hydrostatic pressure of 50 per cent. more than the working pressure, and inspected. A certificate of inspection will be sent to purchaser if desired.



20 FT. STANDARD RETURN TUBULAR BOILER.
All Boilers over 18 feet long are built in three rings.

List of Return Tubular Boilers

H. P. of Boiler	Length of Boiler	Diameter of Boiler	Number of Tubes			Thickness of Shell	Thickness of Heads	Maximum Working Pressure			Diameter of Steam Branch	Diameter of Safety Valve	Diameter of Smoke Stack	Length of Grates	Width of Grates	Approximate Weight of Boiler in Pounds	Approximate Weight with Fixtures and Fittings in Pounds
			3 Inch Tubes	3½ Inch Tubes	4 Inch Tubes			Double Riveted Lap	Double Riveted Butt	Triple Riveted Butt							
	Feet	Inches				Inches	Inches				Inches	Inches	Inches	Inches	Inches		
16	10	33	24	....	....	¼	⅜	140	....	....	3½	1½	15	42	30	2,500	3,893
20	12	33	24	....	....	¼	⅜	140	....	....	3½	1½	15	48	30	3,000	4,393
17	10	36	26	...	.....	¼	⅜	130	....	......	3½	2	17	42	30	2,666	5,271
21	12	36	26	....	....	¼	⅜	130	....	.....	3½	2	17	48	30	3,200	5,805
24	10	40	34	...	...	¼	⅜	..	135	.....	4	2	20	42	36	3,125	5,920
29	12	40	34	....	....	¼	⅜		135	....	4	2	20	48	36	3,750	6,545
29	10	44	43	...	....	¼	⅜	....	125	....	4	2	22	42	42	3,428	6,203
34	12	44	43	....	....	¼	⅜	....	125	......	4	2	22	48	42	4,114	6,889
40	14	44	43	.....	....	¼	⅜	...	125	.....	4	2	22	48	42	4,800	7,575
41	12	48	52	.. ...	....	5-16	⅜	....	140	......	4	2½	24	48	42	5,230	8,185
48	14	48	52	......	.....	5-16	⅜	.....	140	......	4	2½	24	48	48	6,100	9,055
47	12	52	60	....	....	5-16	⅜	...	130	... ..	4½	2½	24	48	48	6,257	9,452
55	14	52	60	.....	......	5-16	⅜	....	130	....	4½	2½	24	48	48	7,300	10,495
53	12	54	64	......	.....	⅜	7-16	......	150	......	4½	2½	26	48	48	6,990	10,250
62	14	54	64	.....	......	⅜	7-16	....	150	......	4½	2½	26	48	48	8,330	11,690

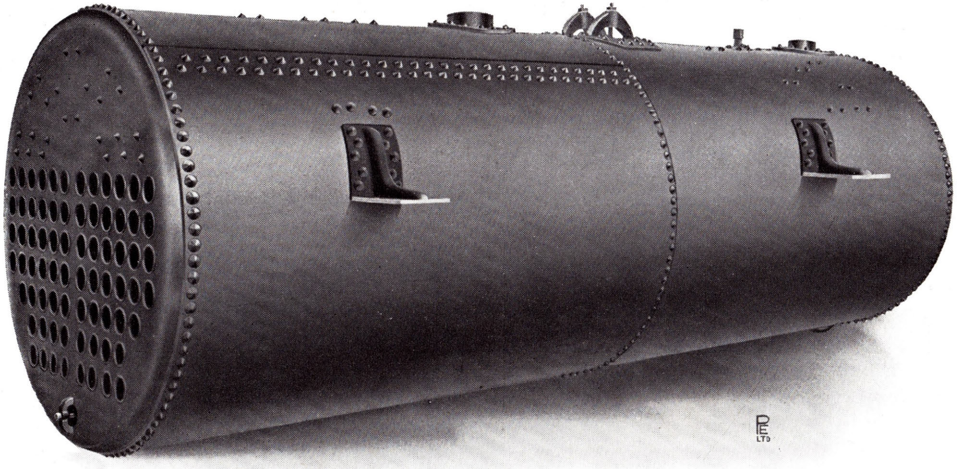


18 FT. RETURN TUBULAR BOILER.

British Columbia Standard.

List of Return Tubular Boilers

H. P. of Boiler	Length of Boiler	Diameter of Boiler	Number of Tubes			Thickness of Shell	Thickness of Heads	Maximum Working Pressure			Diameter of Steam Branch	Diameter of Safety Valve	Diameter of Smoke Stack	Length of Grates	Width of Grates	Approximate Weight of Boiler in Pounds	Approximate Weight with Fixtures and Fittings in Pounds
			3 Inch Tubes	3½ Inch Tubes	4 Inch Tubes			Double Riveted Lap	Double Riveted Butt	Triple Riveted Butt							
	Feet	Inches				Inches	Inches				Inches	Inches	Inches	Inches	Inches		
64	12	60	70	....	....	⅜	7-16	....	.....	140	5	3	26	54	48	8,100	11,690
74	14	60	70		....	⅜	7-16	.....	.....	140	5	3	26	54	48	9,200	12,790
85	16	60		54	....	⅜	7-16	...	....	140	5	3	26	54	54	10,300	13,890
78	12	63	76		......	⅜	7-16	....	.....	135	5	3	28	60	48	8,858	12,723
90	14	63	76		....	⅜	7-16	...	....	135	5	3	28	60	48	10,010	13,875
103	16	63	...	58	......	⅜	7-16	....	.....	135	5	3	28	60	54	11,282	15,147
100	14	66	92		...	7-16	½	....	.....	150	5	3½	30	60	48	11,850	16,550
115	16	66	....	72	....	7-16	½	....	.....	150	5	3½	30	60	54	13,670	18,370
114	14	72	110		....	7-16	½	....	.....	135	6	4	34	66	48	13,200	18,200
130	16	72	....	92	....	7-16	½	....	.....	135	6	4	34	66	54	15,200	20,200
150	18	72	...	.....	72	7-16	½	....	......	135	6	4	34	66	60	17,600	22,600
160	16	78	.....	108	......	½	9-16	....	.....	145	6	4½	36	72	54	20,500	26,500
175	18	78	....	.....	84	½	9-16	...	.....	145	6	4½	36	72	60	22,500	28,500
200	18	84	....	...	106	½	9-16	.....	.....	135	7	4½	40	78	60	26,500	33,500
225	20	84	....	......	106	½	9-16	.....	......	135	7	4½	40	78	60	28,000	35,000

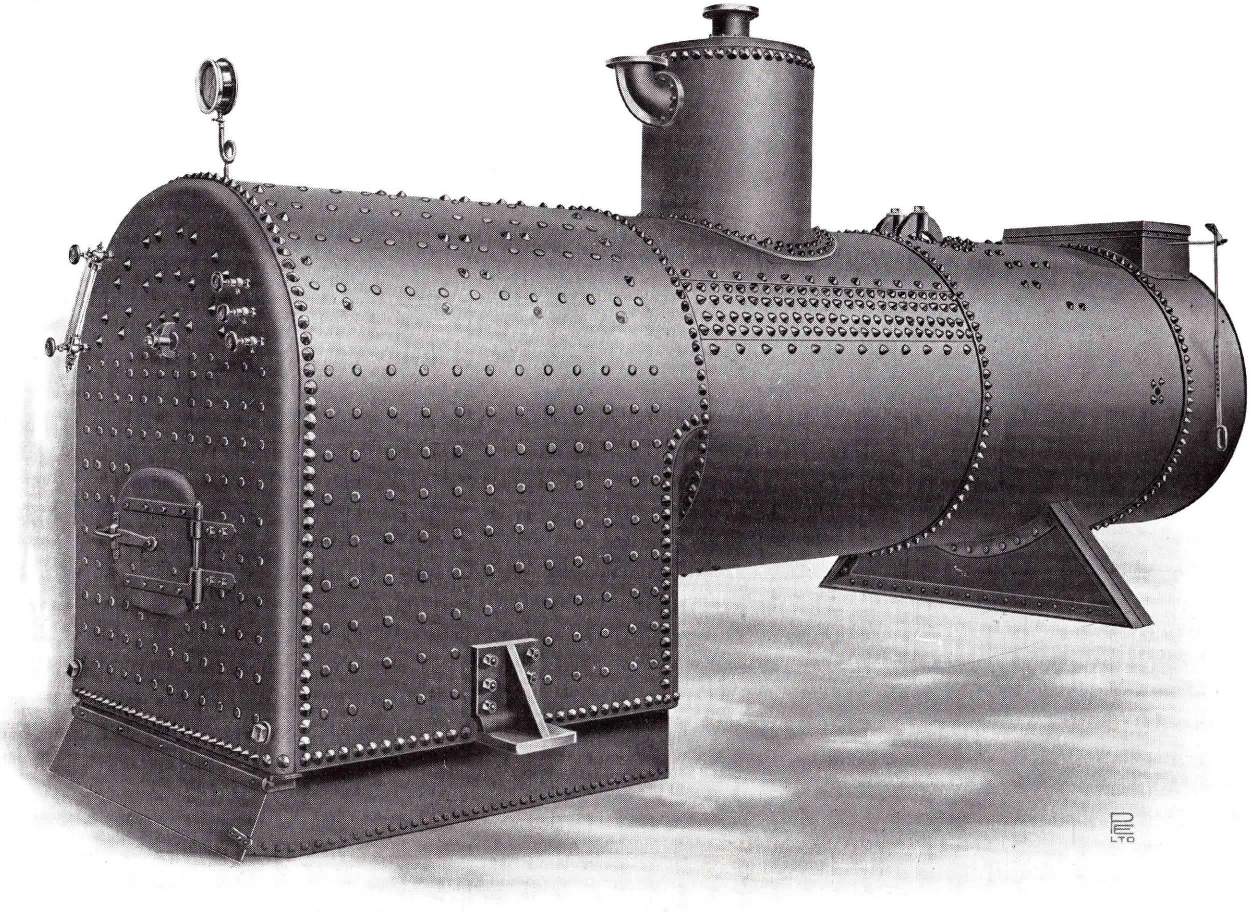


HEATING BOILERS

Dimensions of Steam Heating Boilers—Without Domes.

Tested for 100 lbs. Working Pressure. Canadian Standard.

Diameter inches	Length feet	Thickness of Shell	Thickness of Heads	Tubes		Heating Surface	Commercial H.P. of 15 square feet	Shipping weight about	Diameter of Stack	Will carry sq. ft of Radiation
				No.	Diameter					
24	5	¼	5/16	22	2	67	4½	1620	13	360
24	6	¼	5/16	22	2	80	5½	1800	13	440
30	7	¼	⅜	22	3	150	10	2600	13	800
30	8	¼	⅜	22	3	178	12	2800	13	960
30	10	¼	⅜	22	3	222	14	3300	13	1120
36	8	¼	⅜	32	3	250	17	4050	16	1350
36	10	¼	⅜	32	3	313	21	4550	16	1680
36	12	¼	⅜	32	3	374	25	5050	16	2000
40	8	¼	⅜	38	3	295	20	4650	18	1600
40	10	¼	⅜	38	3	369	24	5200	18	1920
40	12	¼	⅜	38	3	441	29	5750	18	2320
42	10	¼	⅜	40	3	389	26	5700	18	2080
42	12	¼	⅜	40	3	464	31	6300	18	2480
44	10	¼	⅜	44	3	424	28	6050	22	2840
44	12	¼	⅜	44	3	507	34	6700	22	2720
48	10	5/16	⅜	52	3	495	33	7400	22	2640
48	12	5/16	⅜	52	3	594	39	8150	22	3120
48	14	5/16	⅜	52	3	686	46	8950	22	3680
52	12	5/16	⅜	58	3	658	44	9100	24	3520
52	14	5/16	⅜	58	3	764	51	10000	24	4080
54	12	5/16	⅜	64	3	720	48	9600	26	3840
54	14	5/16	⅜	64	3	836	56	10650	26	4480
60	12	5/16	⅜	78	3	865	57	11400	26	4560
60	14	5/16	⅜	78	3	1005	67	12400	26	5360



STANDARD LOCOMOTIVE PORTABLE BOILER, WITH DOME.

Locomotive Portable Boilers

MATERIAL—The material used in the construction of our Locomotive type Portable Boiler is the best quality of flange steel. The tubes are either lap-welded charcoal iron or soft steel. The rivets are mild steel and the stays refined iron.

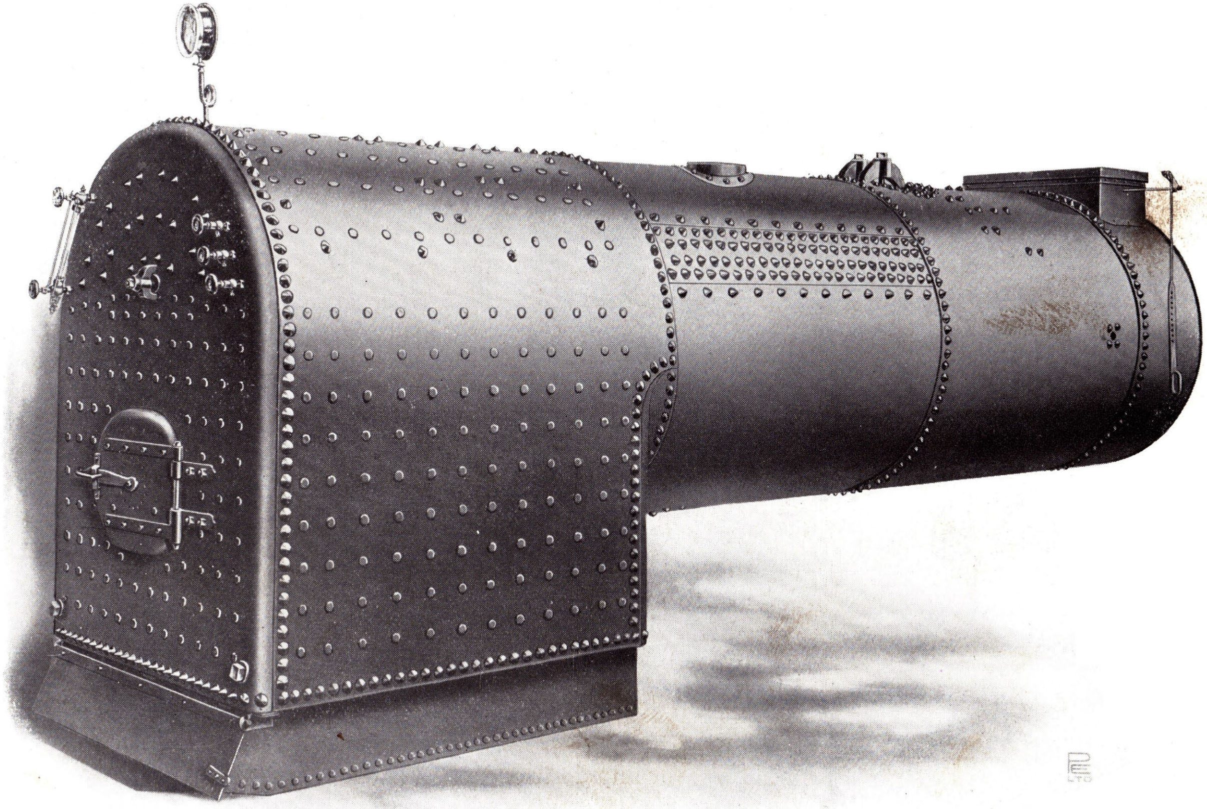
RIVETING—The riveting is principally done by a very powerful hydraulic riveter which brings the plates into such close contact that the strain on the rivets is greatly reduced. The longtitudinal seams are double riveted and the furnaces are large, with ample grate surface and fusible plug in the crown sheet. Boiler can be made with water bottom same as front when required.

CAULKING—The seams are caulked with a pneumatic caulking machine, a blunt tool being used to prevent injury to lower plate. Edges of all plates are planed before being rolled.

STAYING—Special attention is given to bracing and staying. All flat surfaces are well and properly stayed with solid steel stays.

FIXTURES AND FITTINGS—With a Boiler ordered complete the following fixtures and fittings are sent: grates, safety valve, steam guage, blow-off valve, water guage, check valve, guage cocks, stop valve and uptake for stack with damper.

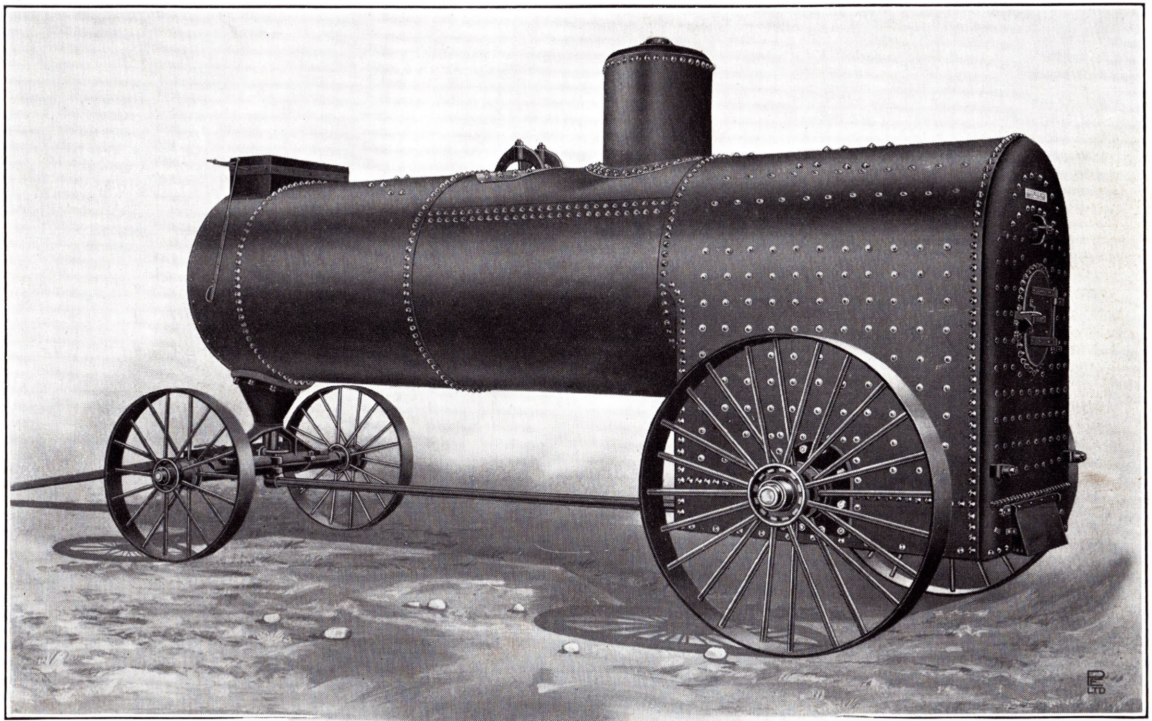
TESTING—The Standard Boilers are all tested and inspected before shipment at 150 lbs. hydrostatic pressure per square inch, and purchaser can have certificate of inspection if desired. This type of Boiler is built for any desired pressure.



STANDARD LOCOMOTIVE PORTABLE BOILER, WITHOUT DOME.

Specifications of Portable Boilers

Number of Size.	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
Horse Power as usually rated	**25**	**30**	**35**	**40**	**50**	**60**	**70**	**80**	**90**	**100**	**110**	**125**
Diameter of Boiler, in inches	**40**	**42**	**44**	**44**	**48**	**54**	**56**	**58**	**58**	**62**	**64**	**66**
Length of Furnace, inside	48	50	50	50	54	60	60	60	60	60	60	60
Width of Furnace, inside	34	36	38	38	42	48	50	52	52	56	52	60
Height of Furnace above grates	33	34	36	36	40	44	44	48	48	50	52	58
Number of Tubes, (3″ diameter)	34	40	44	44	54	60	66	76	76	90	100	108
Length of Tubes used, in feet	8	8	8½	10	10½	11	12	12	14	14	14	15
Thickness of Shell and Outside of Fire Box	9-32	9-32	9-32	9-32	5-16	5-16	11-32	11-32	11-32	⅜	⅜	⅜
Thickness of Furnace Plate	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16	5-16
Thickness of Tube Sheets	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	7-16
Diameter of Dome	22	22	26	26	26	30	30	32	32	32	36	36
Height of Dome	24	24	28	28	28	34	34	36	36	40	40	40
Diameter of Uptake for Stack	18	18	20	20	22	24	26	26	26	30	30	32
Weight of Boiler, about	6,300	6,900	7,600	8,100	9,000	11,000	12,800	14,000	15,000	16,400	17,200	18,100
Weight of Boiler Fixtures, about	1,150	1,250	1,500	1,500	1,600	1,850	2,000	2,150	2,400	2,600	2,800	2,900
Weight of Boiler and Fixtures, complete, about	7,450	8,150	9,000	9,600	10,600	12,850	14,800	16,150	17,400	19,000	20,000	21,000

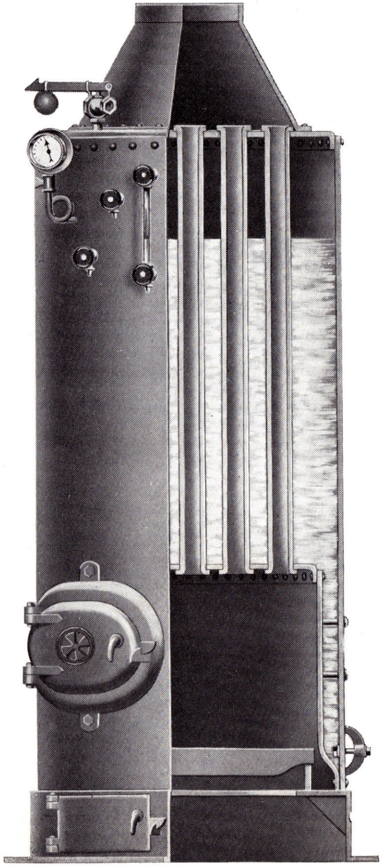


LOCOMOTIVE PORTABLE BOILER ON WHEELS.

Locomotive Portable Boilers on Wheels

On the opposite page is shown an illustration of our Locomotive Portable Boiler on wheels, which has been designed to meet the requirements of those who find it necessary to be continually moving boiler from place to place. They are particularly adapted to the mining industry. The same high grade material and workmanship so noticeable in the construction of our standard boilers is embodied in this type. The Standard Boilers are all tested at 150 lbs. hydrostatic pressure per square inch, and purchaser may have a certificate of inspection if desired.

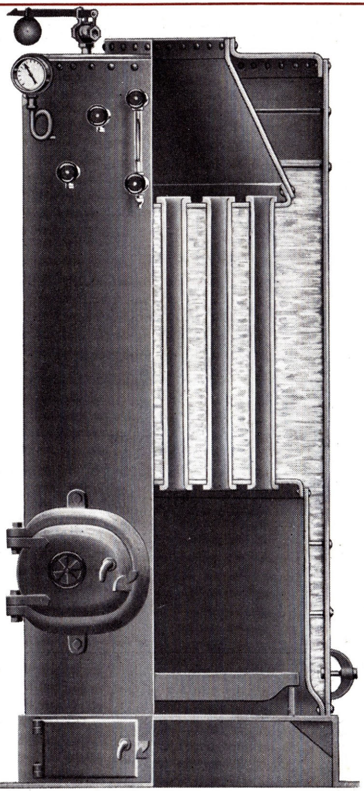
We make this type of boiler with or without dome, and for any pressure desired.



VERTICAL BOILER WITH FULL LENGTH TUBES

Specifications of Vertical Boilers with Full Length Tubes

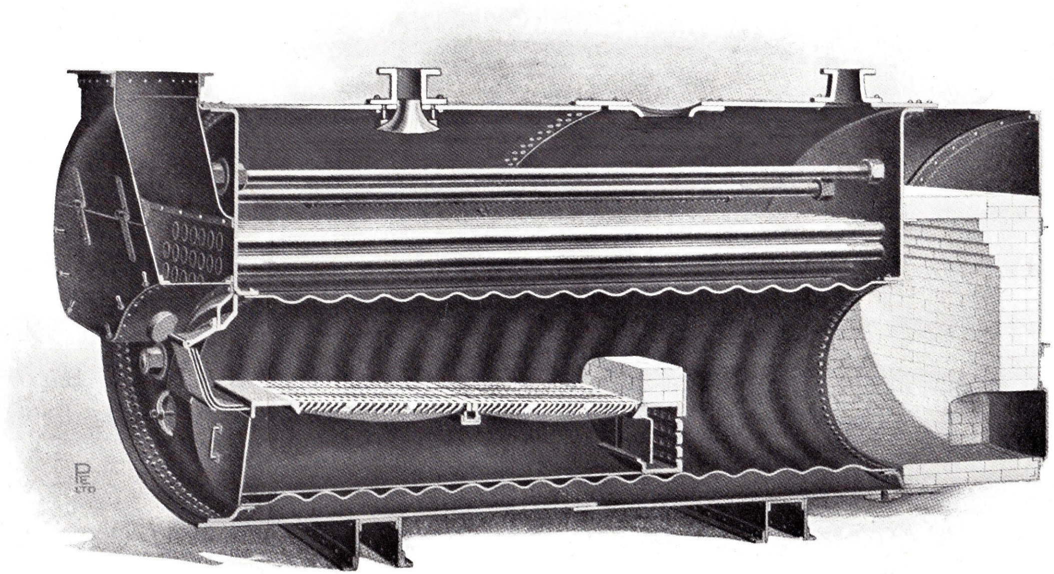
Number of Size	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Horse Power as usually rated	**4**	**5**	**6**	**8**	**10**	**12**	**15**	**18**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**60**
Diameter of Boiler, in inches	**24**	**24**	**24**	**30**	**30**	**30**	**36**	**36**	**36**	**42**	**42**	**42**	**48**	**48**	**48**	**54**
Height of Boiler, in feet	4	5	6	5	6	7	6½	7	8	7¼	8¼	9¼	8½	9	10	9
Diameter of Furnace, in inches	20	20	20	25	25	25	31	31	31	37	37	37	43	43	43	48
Height of Furnace, in inches	24	24	24	27	27	27	27	27	27	27	27	27	30	30	30	30
Thickness of Shell, in inches	¼	¼	¼	¼	¼	¼	¼	¼	¼	9-32	9-32	9-32	5-16	5-16	5-16	5-16
Thickness of Heads, in inches	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Thickness of Furnace Plate, in inches	No 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No 2	No. 2	No. 2	No. 2	No. 2
Length of Tubes used, in inches	24	36	48	33	45	57	51	57	69	60	72	84	72	78	90	78
Number of Tubes (all 2″ diameter)	28	28	28	48	48	48	68	68	68	92	92	92	128	128	128	172
Diameter of Uptake, in inches	12	12	12	14	14	14	15	15	15	18	18	18	20	20	20	24
Weight of Boiler, without fixtures, about	900	1,000	1,150	1,150	1,500	1 700	2,100	2,300	2,600	3,000	3,400	3,800	4,400	4,600	5,000	5,600
Weight of Boiler Fixtures, about	400	400	400	550	550	550	850	850	850	1,200	1,200	1,200	1,700	1,700	1,700	2,300
Weight of Boiler, complete, about	1,300	1,400	1,550	1,700	2,050	2,250	2,950	3,150	3,450	4,200	4,600	5,000	6,100	6,300	6,700	7,900



VERTICAL BOILER WITH SUBMERGED TUBES.

Specifications of Vertical Boilers with Submerged Tubes

Number of Size	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**	**16**
Horse Power as usually rated	**4**	**5**	**6**	**8**	**10**	**12**	**15**	**18**	**20**	**25**	**30**	**35**	**40**	**45**	**50**	**60**
Diameter of Boiler, in inches	**24**	**24**	**24**	**30**	**30**	**36**	**36**	**36**	**42**	**42**	**42**	**48**	**48**	**48**	**54**	**54**
Height of Boiler (shell not extended) in feet	5½	6	6½	6	6½	6½	7	8	7½	8	9	9	9½	10	9½	10½
Diameter of Furnace, in inches	20	20	20	25	25	31	31	31	37	37	37	43	43	43	48	48
Height of Furnace, in inches	24	24	24	27	27	27	27	27	27	27	27	30	30	30	30	30
Height of Chamber, in inches	18	18	18	18	18	18	18	18	24	24	24	27	27	27	30	30
Thickness of Shell, in inches	¼	¼	¼	¼	¼	¼	¼	¼	9-32	9-32	9-32	5-16	5-16	5-16	5-16	5-16
Thickness of Heads, in inches	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜
Thickness of Furnace and Chamber Plates, in inches	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Length of Tubes used, in inches	24	30	36	27	33	33	39	51	39	45	57	51	57	63	54	66
Number of Tubes (all 2" diameter)	28	28	28	48	48	68	68	68	92	92	92	128	128	128	172	172
Diameter of Uptake, in inches	12	12	12	14	14	15	15	15	18	18	18	20	20	20	24	24
Weight of Boiler, without fixtures, about	1,050	1,100	1,200	1,550	1,700	2,100	2,250	2,500	2,900	3,100	3,400	4,300	4,550	4,750	5,500	6,100
Weight of Boiler Fixtures, about	400	400	400	550	550	850	850	850	1,200	1,200	1,200	1,700	1,700	1,700	2,300	2,300
Weight of Boiler, complete, about	1,450	1,500	1,600	2,100	2,250	2,950	3,100	3,350	4,100	4,300	4,600	6,000	6,250	6,450	7,800	8,400



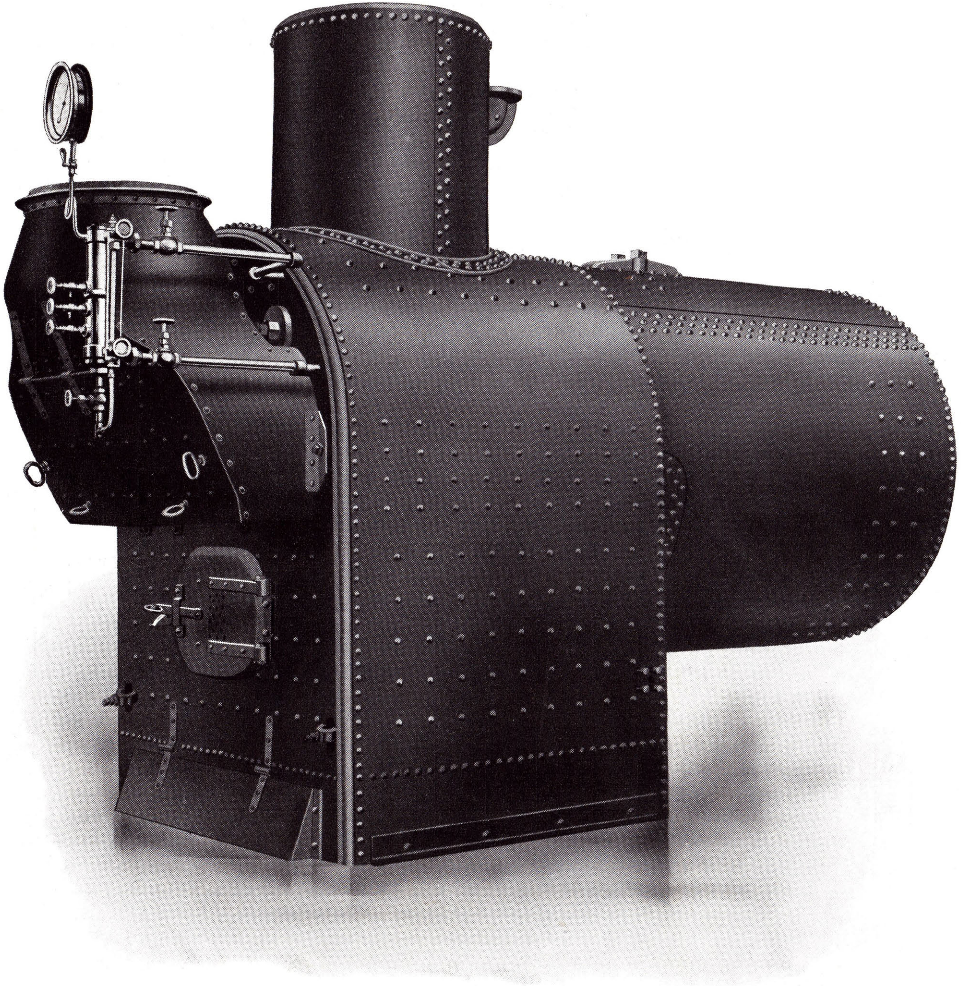
SECTIONAL VIEW OF INTERNAL FURNACE TUBULAR BOILER.

List of Internal Furnace Tubular Boilers up to 200 lbs. Pressure with the Morrison Corrugated Suspension Furnace

H. P. of Boiler	Length	Diameter	Number of Tubes	Diameter of Tubes	Area of Tubes in square feet	Length	Thickness of Shell, 100 lbs. P.	Thickness of Shell, 130 lbs P.	Thickness of Heads, 100 lbs. P.	Thickness of Heads 130 lbs. P.	Diameter of Furnaces	Length of Furnaces	Thickness of Furnace, 100 lbs. P.	Thickness of Furnace, 130 lbs. P.	Number of Stays	Diameter of Stays, 100 lbs. P.	Diameter of Stays, 130 lbs. P.	Diameter of Stay Ends, 100 lbs. P.	Diameter of Stay Ends, 130 lbs. P.	Depth of Comb Chamber	Diameter of Dry Pipe	Diameter of Steam Branch	Diameter of Safety Valve	Diameter of Uptake	Diameter of Feed Pipe	Length of Grates	Grate Surface in square feet	Heating Surface in square feet	Ratio of H. S. to G. S.	Weight, 100 lbs. P.	Weight, 130 lbs. P.
75	14′ 8″	6′	42	3½″	2.44	11′ 6″	13-32″	7-16″	9-16″	⅝″	36″	11′2¾″	5-16	11-32″	4	2″	2¼″	2⅜″	2⅝″	24″	2½″	3 ″	2½″	20″	1¼″	5′ 0″	15′0″	527	35 to 1	....	....
100	15 8	7	56	3½	3.25	12 6	7-16	15-32	9-16	⅝	38	12 2¾	5-16	⅜	4	2	2¼	2⅜	2⅝	24	2½	3½	3	23	1¼	6 4	20 0	733	36 1	....	....
125	15 8	7 6″	70	3½	4.06	12 6	15-32	½	9-16	⅝	45	12 2¾	11-32	7-16	4	2	2¼	2⅜	2⅝	24	3	4	3½	26	1½	6 8	25 0	905	36 1	....	....
150	16 2	8	80	3½	4.64	13 0	½	17-32	9-16	⅝	50	12 8¾	⅜	15-32	4	2	2¼	2⅜	2⅝	24	3½	4½	4	28	1½	7 3	30 0	1071	35 1	....	....
200	15 9	9 6	108	3½	6.26	12 6	½	⅝	9-16	⅝	^{2}38	12 2¾	5-16	⅜	8	2	2¼	2⅜	2⅝	24	3½	5	4½	33	1½	6 4	40 0	1423	35 1	....	....
250	15 9	10 6	137	3½	7.95	12 6	17-32	23-32	9-16	⅝	^{2}45	12 2¾	11-32	7-16	10	2	2¼	2⅜	2⅝	24	4	5	5	36	2	6 8	50 0	1780	35 1	....	....
300	16 3	11 6	161	3½	9.34	13 0	19-32	25-32	9-16	⅝	^{2}50	12 8¾	⅜	15-32	12	2	2¼	2⅜	2⅝	24	4½	6	5½	40	2	7 3	60 0	2157	35 1	....	....

The Same Boilers for 160 and 200 lbs. Pressure.

							160 lbs.	200 lbs.	160 lbs	200 lbs.			160 lbs.	200 lbs.		160 lbs.	200 lbs	160 lbs	200 lbs.											160 lbs.	200 lbs.
75	14′ 8″	6′ 0″	42	3½″	2.44	11′ 6′	17-32″	11-16′	11-16″	¾″	36″	11′2¾″	13-32″	17-32″	4	2½″	2⅝″	2⅞″	3″	24″	2½″	3 ″	2½″	20″	1¼″	5′ 0″	15′0″	527	35 to 1	....	....
100	15 8	7 0	56	3½	3.25	12 6	19-32	23-32	11-16	¾	38	12 2¾	7-16	9-16	4	2½	2⅝	2⅞	3	24	2½	3½	3	23	1¼	6 4	20 0	733	36 1	....	....
125	15 8	7 6	70	3½	4.06	12 6	⅝	25-32	11-16	¾	45	12 2¾	17-32	21-32	4	2½	2⅝	2⅞	3	24	3	4	3½	26	1½	6 8	25 0	905	36 1	....	....
150	16 2	8 0	80	3½	4.64	13 0	21-32	13-16	11-16	¾	50	12 8¾	9-16	23-32	4	2½	2⅝	2⅞	3	24	3½	4½	4	28	1½	7 3	30 0	1071	35 1	....	....
200	15 9	9 6	108	3½	6.26	12 6	25-32	31-32	11-16	¾	^{2}38	12 2¾	7-16	9-16	8	2½	2⅝	2⅞	3	24	3½	5	4½	33	1½	6 4	40 0	1423	35 1	....	....
250	15 9	10 6	137	3½	7.95	12 6	⅞	1 3-32	11-16	¾	^{2}45	12 2¾	17-32	21-32	10	2½	2⅝	2⅞	3	24	4	5	5	36	2	6 8	50 0	1780	35 1	..	....
300	16 3	11 6	161	3½	9.34	13 0	15-16	1 3-16	11-16	¾	^{2}50	12 8¾	9-16	23-32	12	2½	2⅝	2⅞	3	24	4½	6	5½	40	2	7 3	60 0	2157	35 1	....	....



SQUARE FIRE BOX MARINE BOILER.

Square Fire Box Marine Boilers

With Flues and Return Tubes

The illustration on opposite page shows our square fire box Marine Boiler, which is a favorite style for tugs, and is in general use on Canadian lakes and canals. They are all built under the direct supervision of a Government Inspector. He first inspects and tests the plate. Second inspection is made after boiler is rolled, flanged and fitted together and before any riveting is done. In this way he has an opportunity to pass judgment on the flanging, to see that plates caliper the proper thickness, to see that rivet holes are properly drilled so that the possibility of drifting is obviated, and also to see that edges of plates are properly planed, etc. His third inspection is made when completed boiler is under cold water pressure. He then stamps boiler with pressure allowed, and issues certificate of inspection to owner.

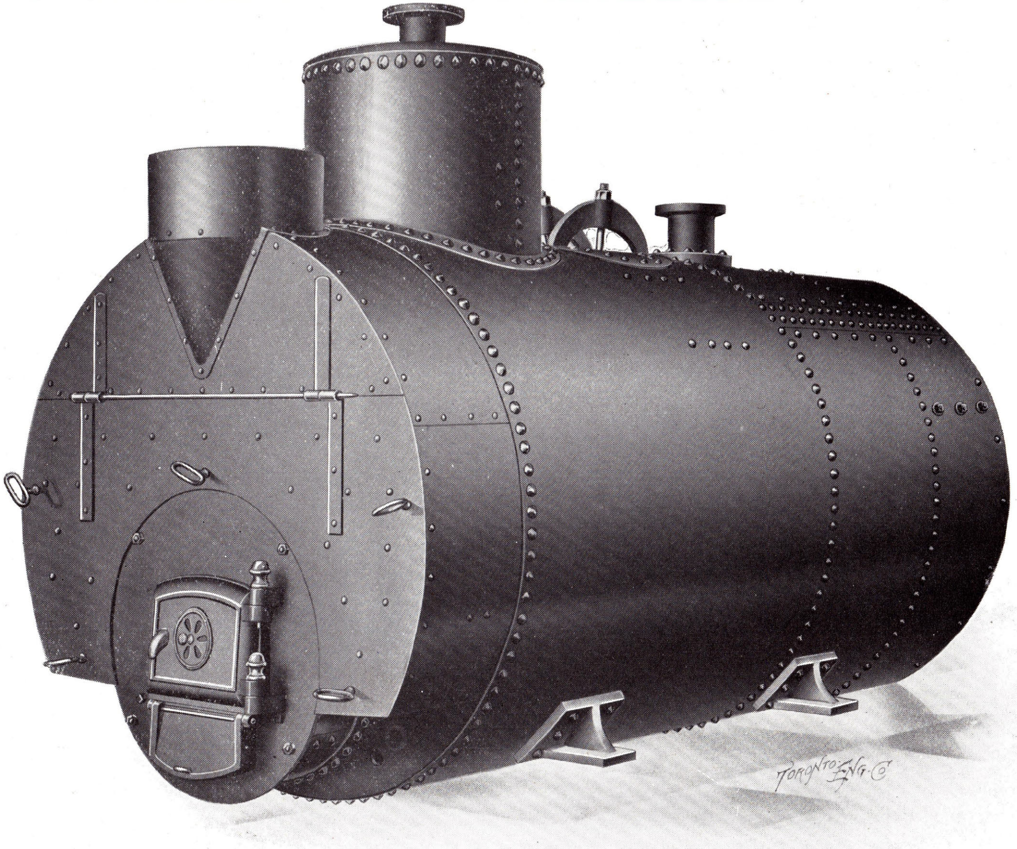
We furnish the necessary affidavit of manufacture.

We build these boilers to stand any pressure.

FIXTURES—Smoke box, grates, grate bearers.

FITTINGS—Twin safety valve to Government regulations, steam and water gauges, three try cocks, blow-off cock, flue scraper, poker, hoe, slicer.

EXTRAS—Smoke stack, smoke stack jacket, rain curtains, guy rods.


TORONTO ENG. Co.

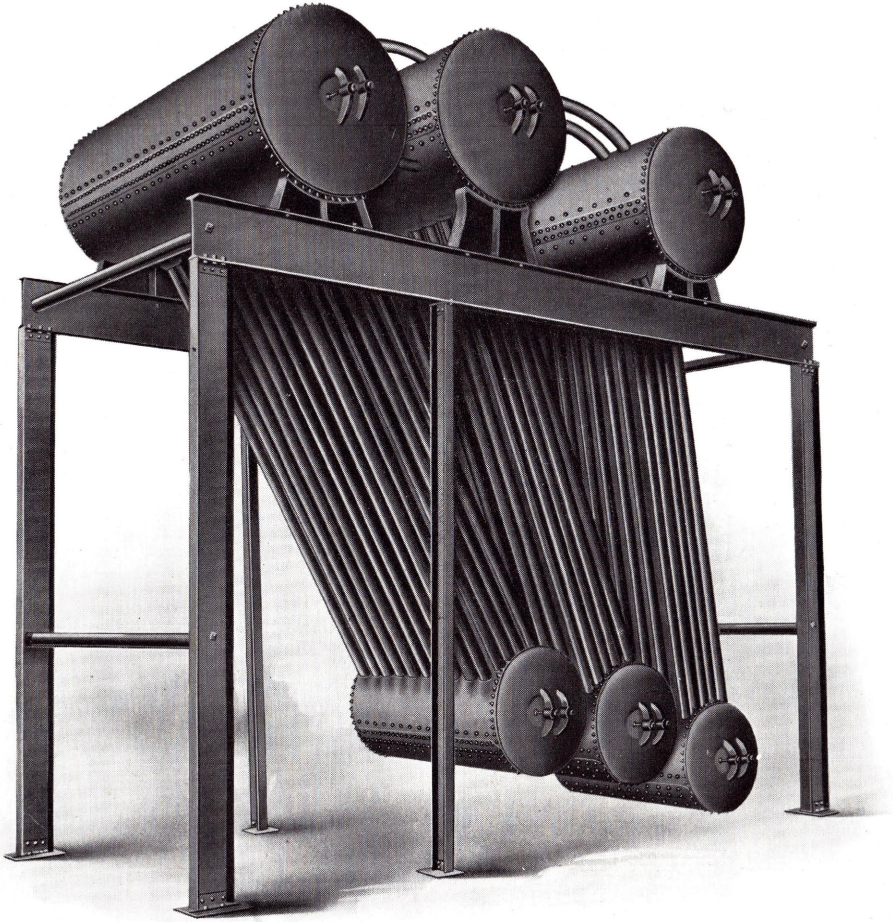
THE CLYDE MARINE BOILER.

The Clyde Marine Boiler

Either Water or Dry Back

This is a favorite style of Marine Boiler, owing to its compactness, durability and low centre of gravity. They can be built of any required size and power and for any desired pressure to suit customer. An Adamson joint is placed in the furnace of long Boilers, and where very large furnaces are required, they can be supplied corrugated. The diameter and number of tubes can be varied. Steam pressure can be varied.

Our Marine Boilers are all built under Government inspection. The first inspection is a thorough examination of the plate before it is touched. Second inspection takes place after the rolling, flanging, drilling and fitting has been done and before a rivet has been permanently driven. Third inspection is made when boiler is finished, and under cold water pressure, stamping it with date of inspection, pressure allowed, etc.



WATER TUBE BOILER, SIDE ELEVATION, NOT BRICKED IN.

Water Tube Boilers

The Goldie & McCulloch Water Tube Boiler is made of three sections, each consisting of a steam drum at top, water drum at bottom and a number of rows of tubes (five tubes to each row, the number of rows in each section depending on size of boiler required) expanded into flat surfaces on steam (with copper ferrules around the ends of tubes in steam drums) and water drums. The cylindrical tube sheet of both the upper and lower drums are formed in a powerful hydraulic press so that the metal around each drilled hole for the tubes is at right angles to the length of the tube. By this form of construction the tube sheet is, to all purposes, flat, but does not require staying.

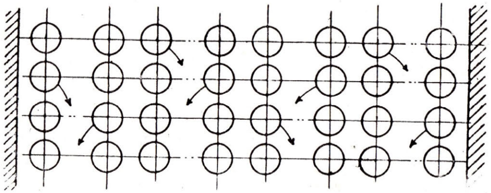
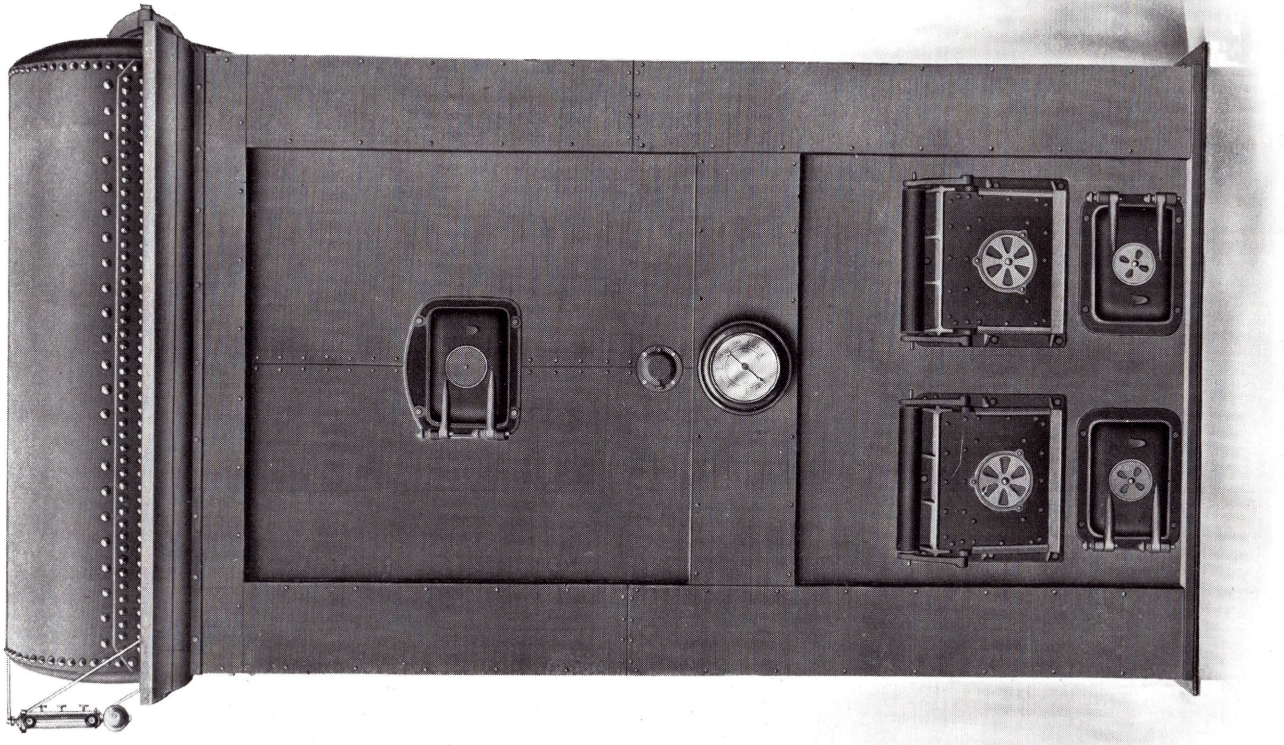


Fig. 1

Removal of tubes is simple. The tubes are spaced as in Fig. 1, and each alternate is one half inch wider than the tube diameter; to remove an inner tube it is merely necessary to cut the tube as near the tube sheet as possible, pass it out through the wide space between the tubes as indicated by the arrows in Fig. 1 and then remove it from the setting through either the side or front doors provided for the purpose. Any tube may be replaced without disturbing any other tube or the tube sheet or damaging the fire tile baffles.



FRONT VIEW OF WATER TUBE BOILER (NOT BRICKED IN.)

Water Tube Boilers

Continued

Each steam drum is connected to its neighboring steam drum by horizontal connecting or circulating tubes and the water drums are also connected in a similar manner.

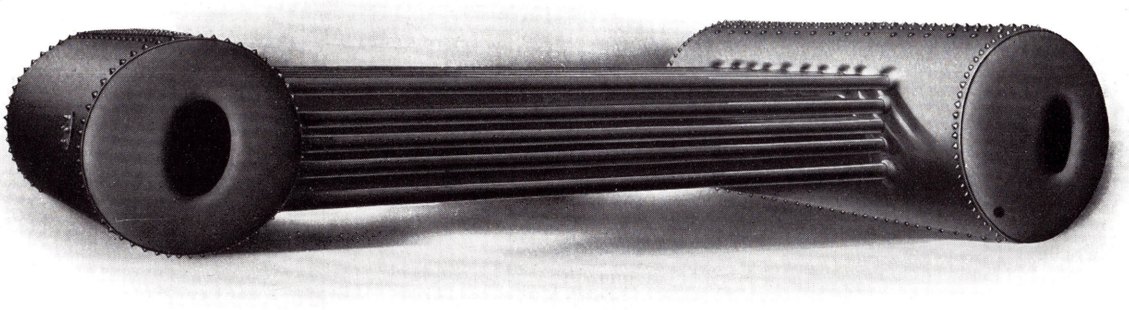
The whole boiler is hung, suspended on girders and tied to the back so that it is entirely free at the bottom to allow for any expansion.

The feed water enters the rear steam drum at the point farthest away from the fire and the water flows down the tubes in the rear section and up the tubes in the front section. The advantage of this circulation is obvious, as the water enters the boiler at the place where the temperature of the gases is lowest, precipitating any mud or dirt into the bottom of rear drum, and all the tubes in the front sections, which are in contact with the greatest heat, have practically clean water to deal with, and therefore no deposit is found in any of the tubes exposed to great heat. The baffle walls rest directly upon the tubes and guide the course of the gases up the front bank, down the middle and up rear bank, and bringing them into such intimate contact with the boiler surface that the heat is quickly and thoroughly extracted from them.

Large doors are arranged in side wall of boiler for access into the bottom drums and also into the combustion spaces for inspection etc.

Small sight holes are also arranged in the walls for inserting steam jet for cleaning soot from the tubes.

Any scale collecting in the inside of the tubes can be quickly and cheaply removed by a turbine cleaner consisting of a cutting tool driven by a water turbine attached to a hose, which operation requires no labor beyond that necessary to guide the hose and cleaner attached and shift it from one tube to another. A selection can be made of a great many different makes of cleaners.

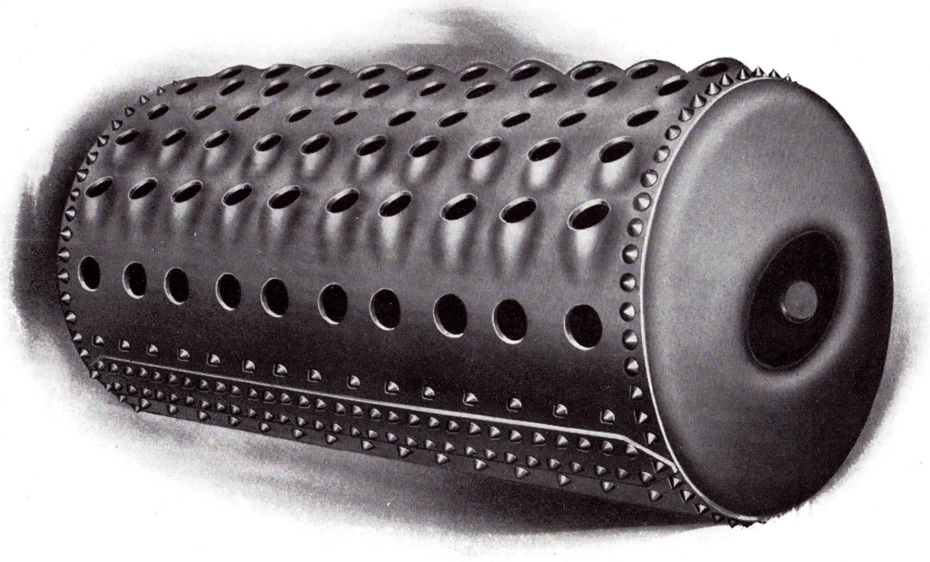


ONE SECTION OF WATER TUBE BOILER CONNECTED,

Water Tube Boilers

Continued

In many forms of Water Tube Boilers the design is such that considerable time and money are spent in removing doors and covers for the inspection of tubes and in some cases, even after the doors have been removed, the formation of the tubes is such that it is impossible to see through them. These very important points have been carefully considered in the designing of this Water Tube Boiler, and we have no hesitation in saying that for ease of access for purposes of examination or repairs no other boiler on the market offers such facilities. The only work to be done to thoroughly examine the inside of the tubes for their total length is the removal of the manhole doors on the six drums. Free access can be gained to every tube and as they are straight they can be thoroughly examined. The removing and replacing of the manhole doors can be done by any ordinary fireman and no complicated tools are required.



ONE OF THE LOWER DRUMS OF WATER TUBE BOILER.

Showing Layout of Tube Holes.

Water Tube Boilers

Continued

The following points and advantages which are essential to insure successful working of any boiler are contained in this Water Tube Boiler :

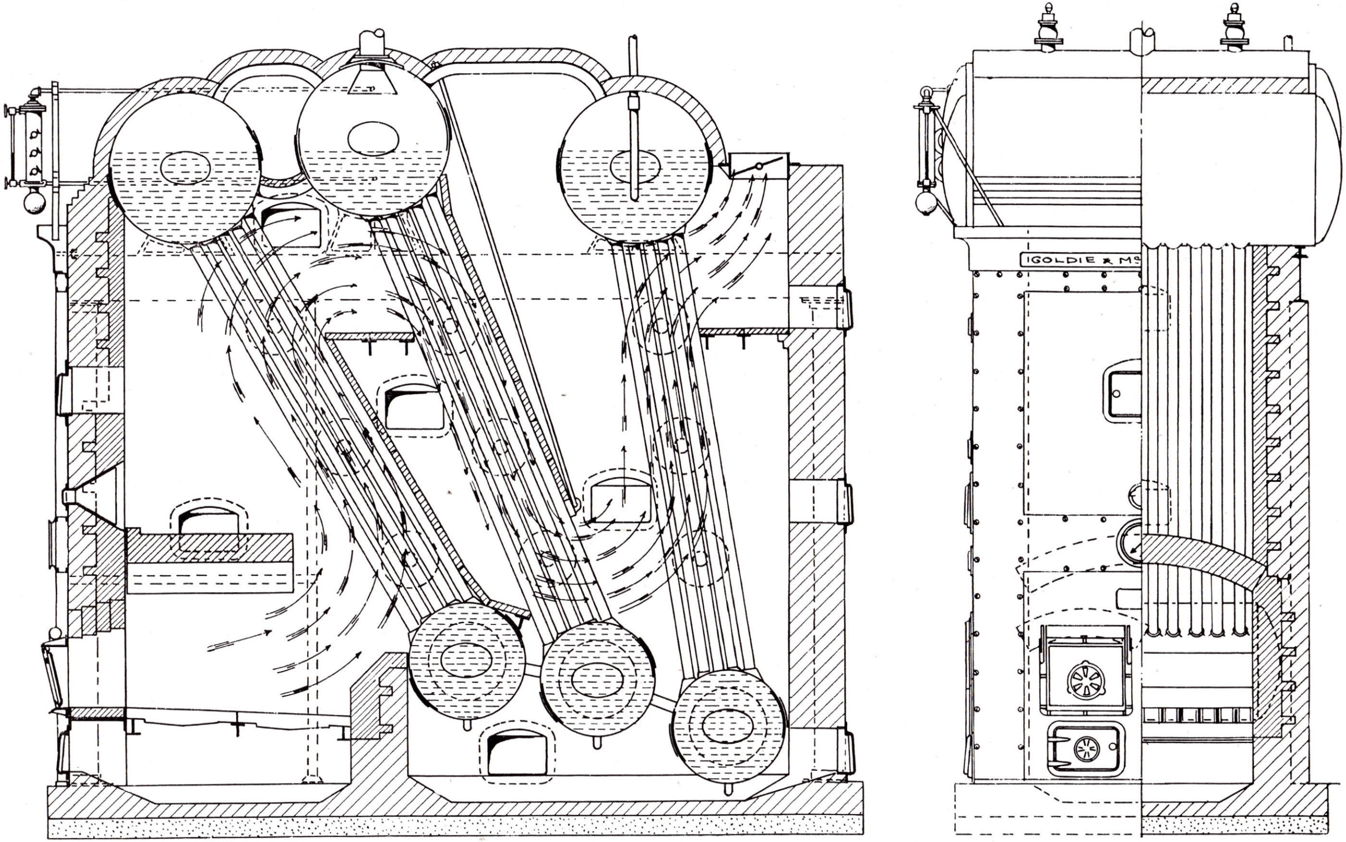
STRAIGHT TUBES—All heating tubes perfectly straight and nearly vertical allowing an unobstructed view through each tube for inspection.

FREE EXPANSION—All parts of the boiler free to expand.

MAXIMUM STEAM RELEASE AREA— Each tube being nearly vertical and perfectly straight and entering the steam drum direct without intervention of any headers, ensures perfect steam release and so adds to the efficiency of the boiler as there are no sharp turns to retard flow of the steam globules to the steam pipe.

FREE ACCESS—Free access to all parts whether for examination, cleaning or repairs.

MINIMUM DEPOSIT IN TUBES—As these tubes are nearly vertical and straight, deposits are not retained in them, but are collected in the large mud drums, and thus overheating and destruction of the tubes are reduced to a minimum. This is a distinct advantage over boilers with horizontal tubes, which invariably burn through in the bottom rows from the great tendency for deposits to collect in any tubes lying horizontally. The same danger exists with vertical tubes if they are not straight, as any bend must collect deposit.



SECTIONAL LINE DRAWING OF WATER TUBE BOILER. SIDE AND FRONT ELEVATIONS SHOWING BRICK WORK.

Water Tube Boilers

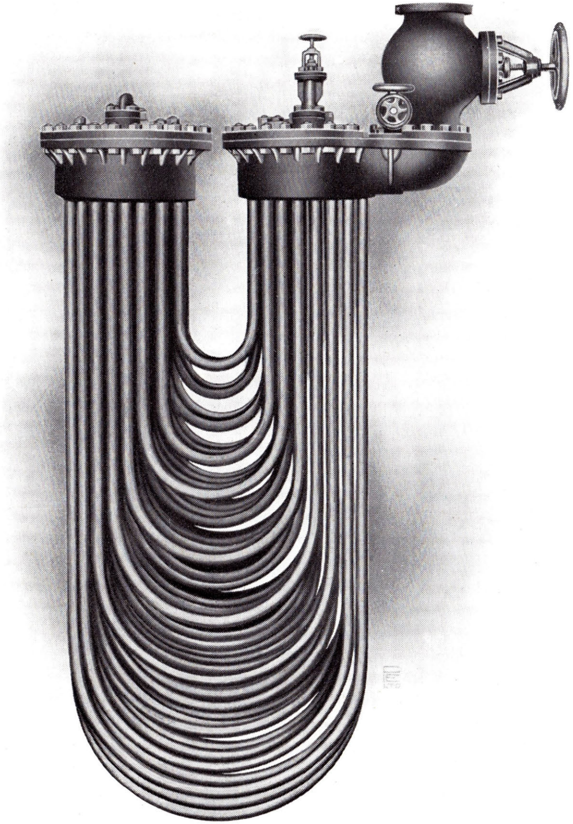
Continued

SIMPLICITY OF CONSTRUCTION AND DESIGN—These boilers may readily be worked and understood by any ordinary fireman. The design offers great facility for cleaning as by breaking one manhole on each drum the whole of the tubes can be thoroughly examined internally.

LARGE COMBUSTION CHAMBERS—Large combustion chambers so arranged that the whole of the heat is utilized in the most economical way and combustion of gases completed before leaving the heated surface.

The special features which are claimed for the boiler are :

Good combustion and circulation.
Absence of thick internal scale.
Straight heating tubes.
Ease in examination and cleaning inside surface of tubes and all internal parts.
Easy removal and replacing of tubes.
Absence of screwed joints.
Ease of erection.
Large steam release area.
Large steam space.
Large and small units.



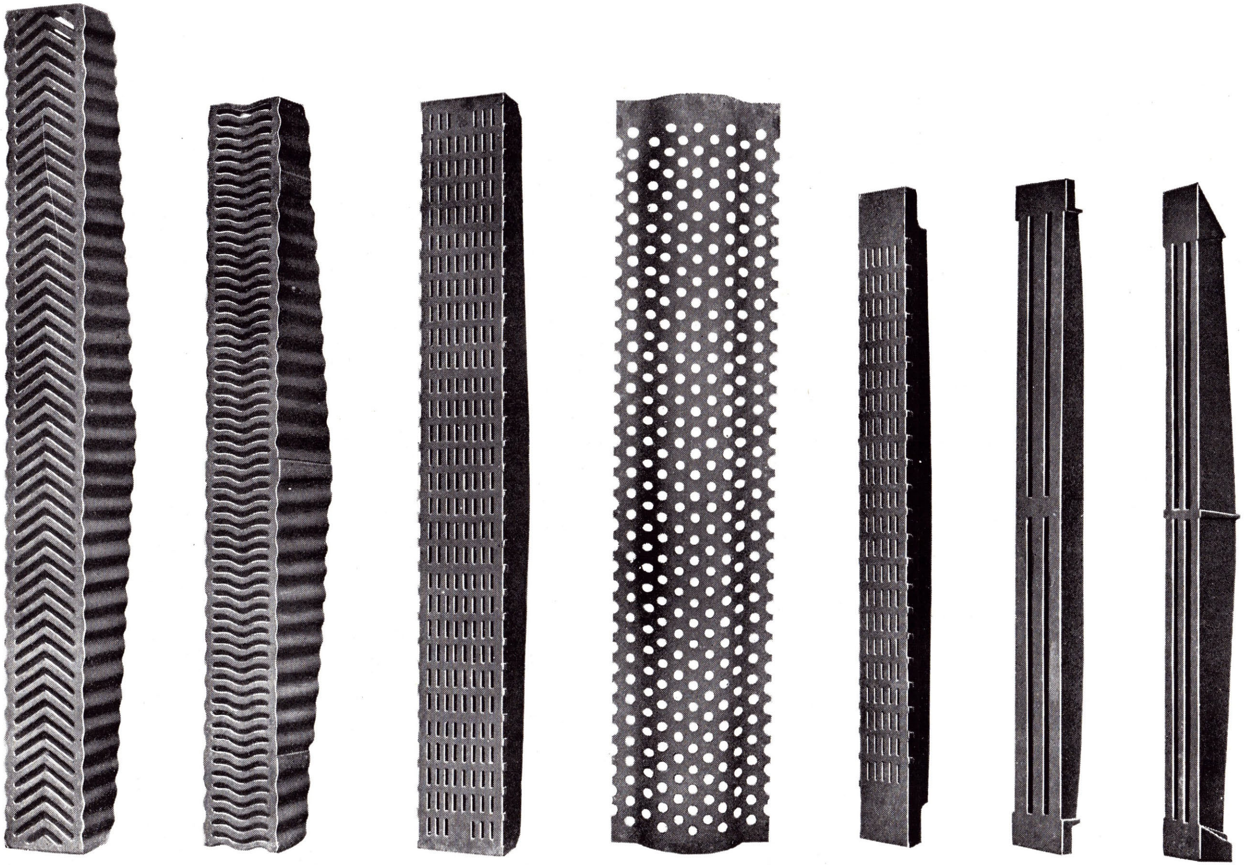
SUPERHEATER

Superheaters

When required a superheater can be connected to a standard water-tube boiler. The superheater is simple in form, consisting of single loops of solid drawn steel pipe connected to two headers.

A flooding arrangement is provided whereby the superheater can be flooded when so desired.

The superheater is placed between the second and third banks of tubes of the boiler and is provided with a by-pass for regulating the temperature of superheat.



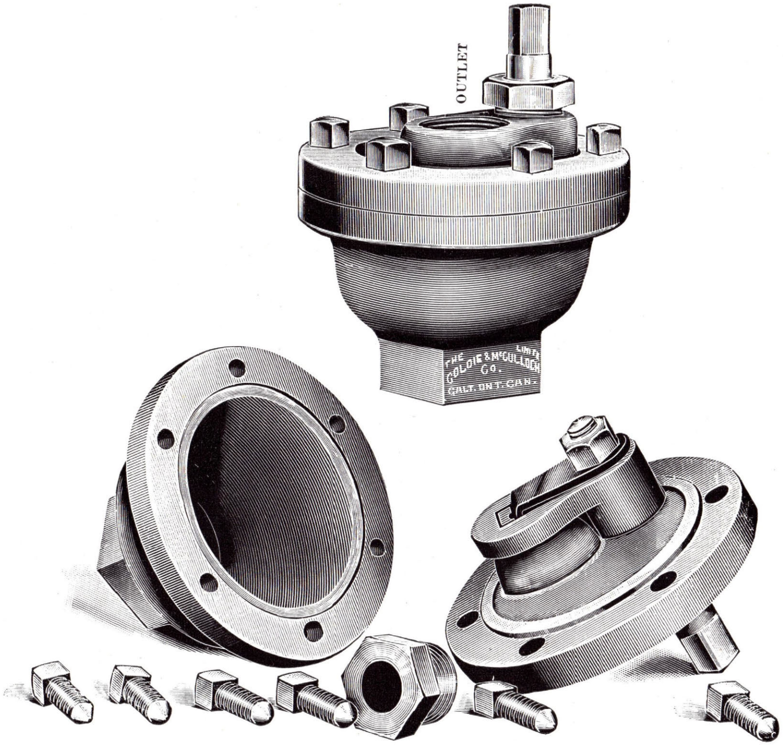
No. 1 No. 2 No. 3 No. 4 No. 5 No. 6 No. 7

GRATE BARS.

Grate Bars

The illustrations on opposite page show the different styles of grate bars which we supply with our Boilers. No. 1 is our standard herringbone grate bar with which our boilers are supplied unless order specifies otherwise. No. 4 is specially designed for the burning of sawdust. Numbers 2, 3, 5, 6 and 7 are specials, and are only used at customer's request.

SHAKING GRATES—If desired we can supply Shaking Grates with any of our standard boilers at an additional cost.


OUTLET
THE GOLDIE & McCULLOCH CO. LIMITED
GALT, ONT. CAN.

DISC BLOW-OFF VALVE

Disc Blow-off Valves

These illustrations show assembled, and in detail, our disc blow-off valve. The body of the valve consists of two flanged castings bolted together. The top casting forms the valve seat and contains the valve spindle stuffing box. The valve face is flat and the valve slides across the seat when the valve spindle is rotated. The valve is held up to the seat by means of a flat spring. The advantages of this form of valve are apparent. It is extremely simple. It has a guard which by a sliding motion cleans the valve seat of all grit and dirt, thus avoiding the wear and leakage to which the ordinary plug valve is liable. The stem is packed with metallic packing.

The valve is easily taken apart and the seat and valve scraped if necessary. The hexagon side of valve is connected to boiler.

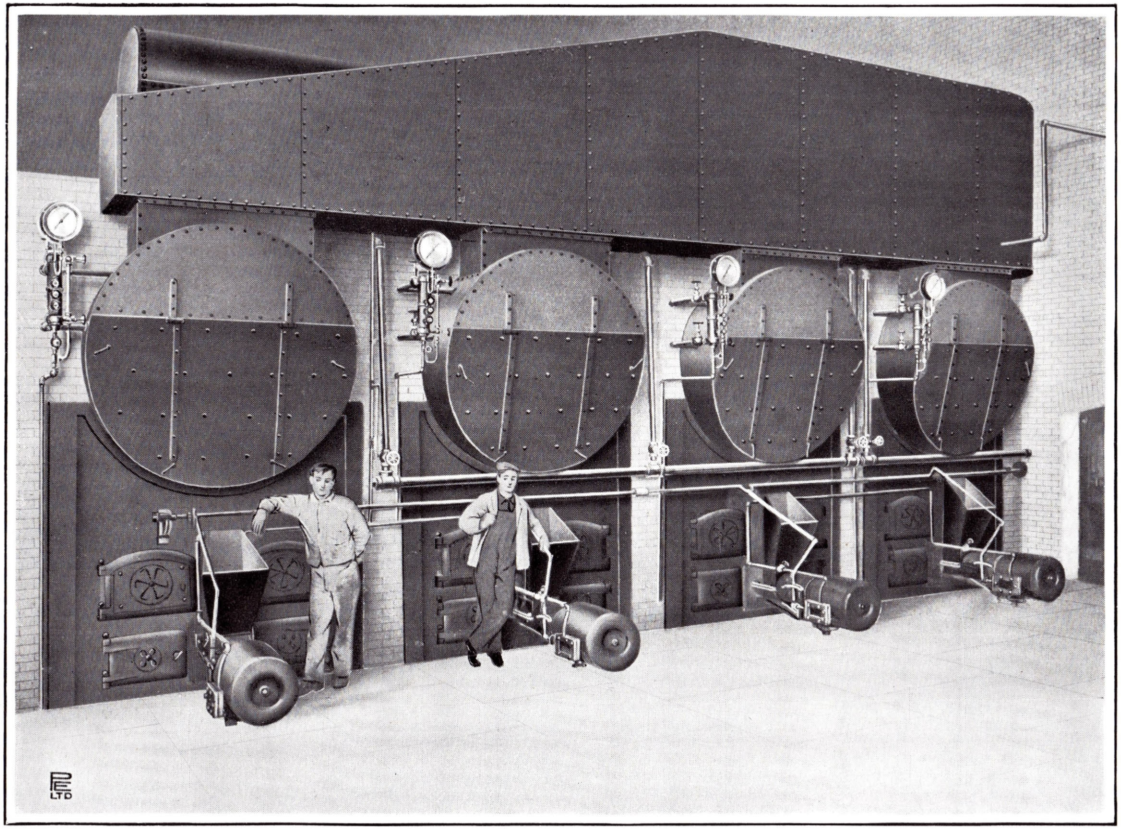
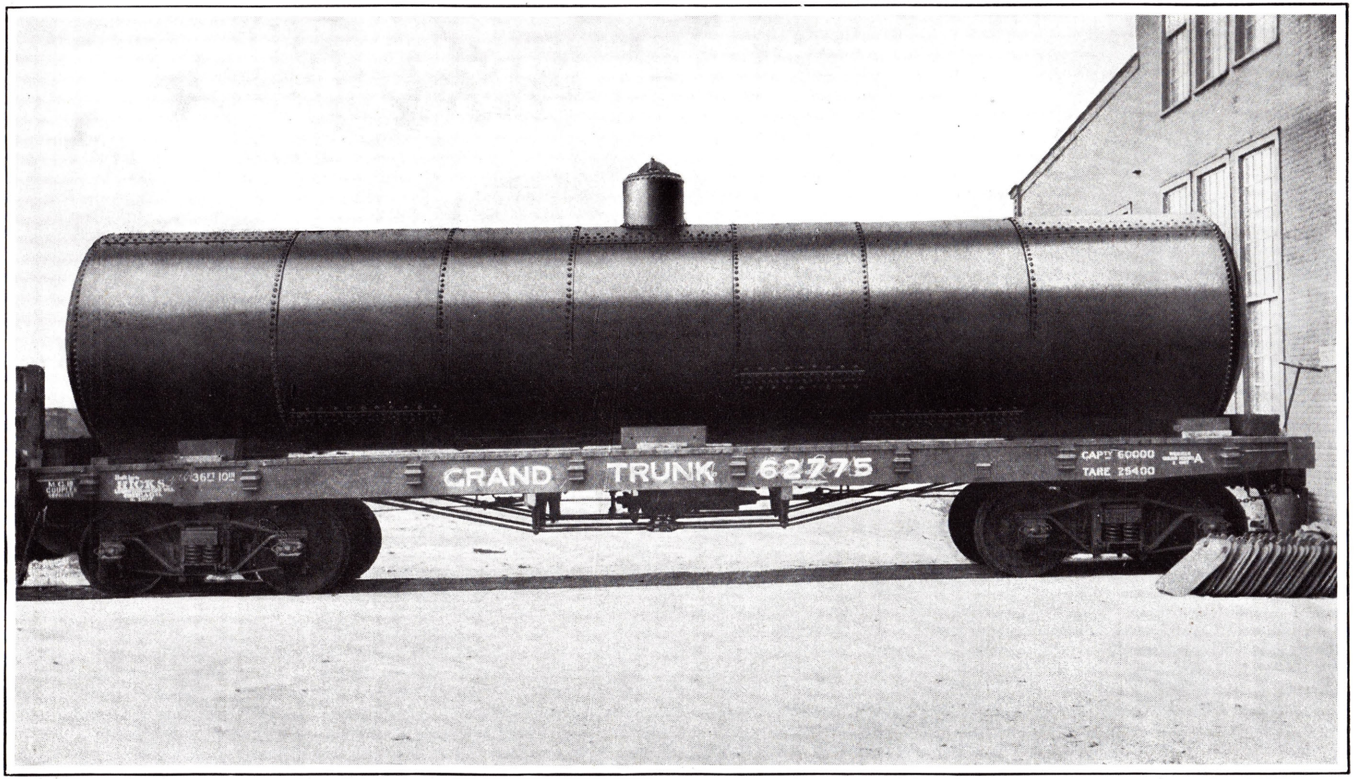


ILLUSTRATION SHOWS BOILER ROOM OF THE COSMOS COTTON CO. AT YARMOUTH, N. S.
Equipped by us with Four 73″ x 20′ Boilers, fitted with Half Fronts and Extended Smoke Box.

Smoke Connections

The smoke connections furnished with our boilers are of ample size for the boilers to which they are connected.

We make the connections of rectangular cross section, if not otherwise specified, but are prepared to make either oval or circular sections if preferred.


GRAND TRUNK 62775
CAPY 60000
TARE 29400
36FT 10IN
HICKS

TANKS.

Tanks

Our extensive and varied equipment makes it possible for us to undertake contracts for all kinds of tank work. In this type of work we are prepared to handle material ranging from number sixteen gauge sheet steel to plate one and one-half inches thick. The regular out-put from our shop includes, Air Tanks, Oil Tanks, Rendering Tanks, Hot Water Tanks, Soap Tanks, Pressure Filters and Vulcanizers, besides all kinds of steel pipe work in connection with hydraulic installations.

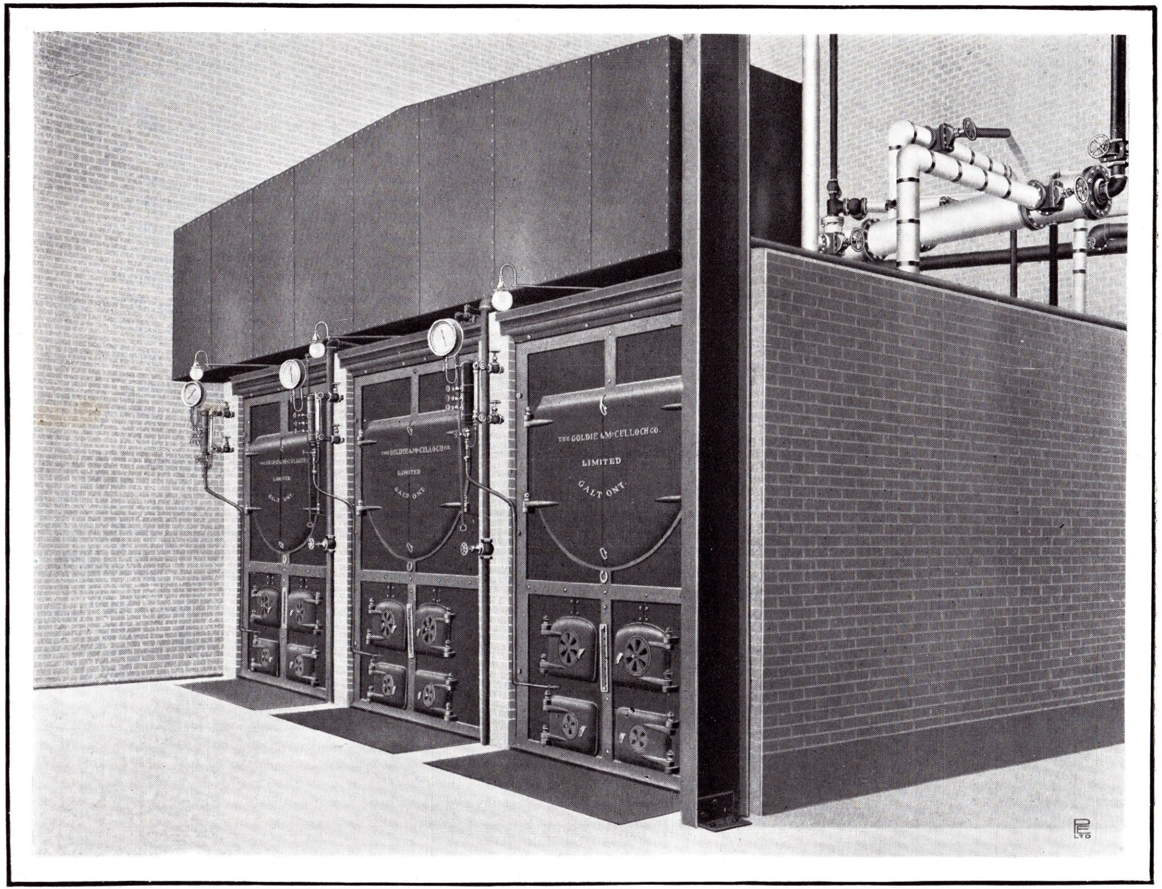

THE GOLDIE & McCULLOCH CO.
LIMITED
GALT ONT.
THE GOLDIE & McCULLOCH CO.
LIMITED
GALT ONT.
THE GOLDIE & McCULLOCH CO.
LIMITED
GALT ONT.

ILLUSTRATION SHOWS BOILER ROOM OF THE McGREGOR-GOURLAY CO., LIMITED.

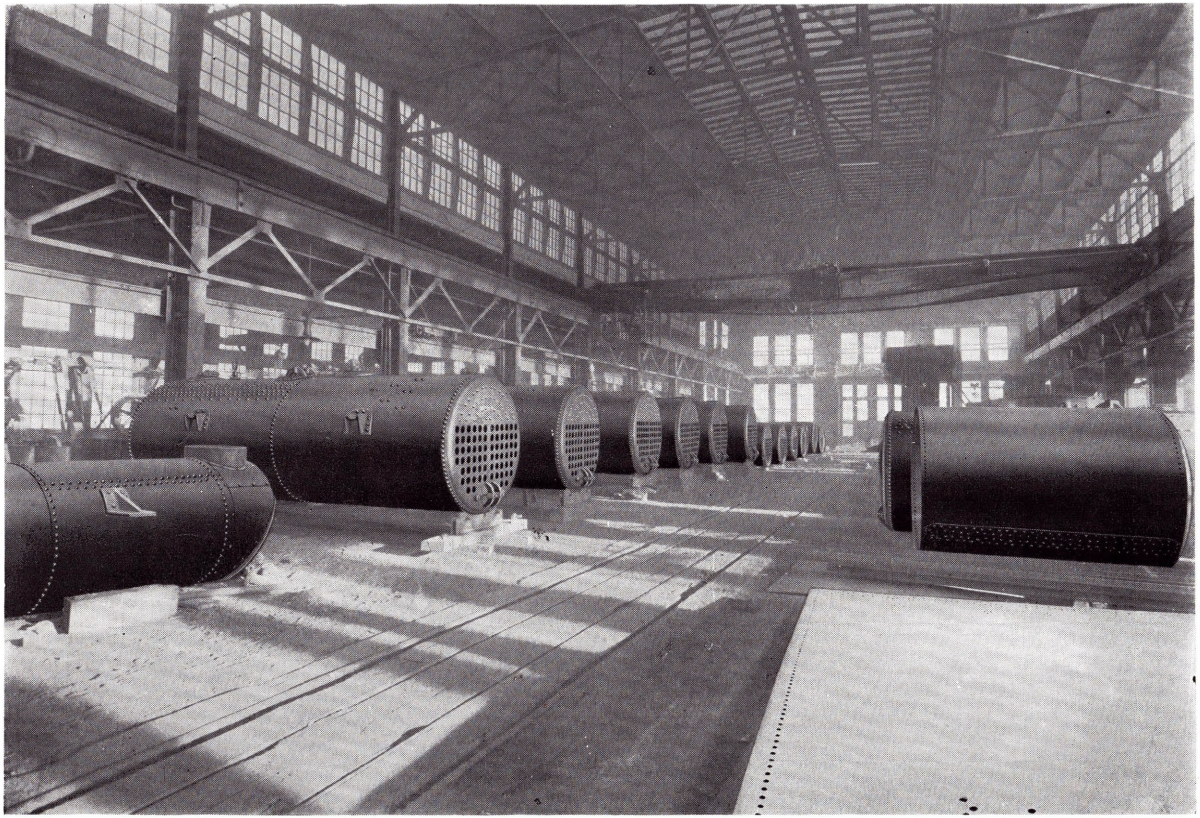
Equipped by us with three 72 x 18 ft. Horizontal Return Tubular Boilers.

Kent's Table of Size of Chimneys for Steam Boilers

Formula: H. P.=3.33 (A–0.6 sq. root of A) sq. root of H. (Assuming 1 H.P. =5 lbs. of coal burned per hour.)

Diameter Inches	Area in A sq. feet	Effective Area, E=A 0 6 sq. root of A, sq. feet	HEIGHT OF CHIMNEY														Equivalent Square Chimney Side of Square, sq. root of E plus 4 inches
			50 feet	60 feet	70 feet	80 feet	90 feet	100 feet	110 feet	125 feet	150 feet	175 feet	200 feet	225 feet	250 feet	300 feet	
			COMMERCIAL HORSE POWER OF BOILER														
18	1.77	.97	23	25	27	29	....	....	....	....	....	....	....	....	....	....	16
21	2.41	1.47	35	38	41	44	....	....	....	....	....	....	....	....	....	....	19
24	3.14	2.08	49	54	58	62	66	....	....	....	....	....	....	....	....	....	22
27	3.98	2.78	65	72	78	83	88	....	....	....	....	....	....	....	....	....	24
30	4.91	3.58	84	92	100	107	113	119	....	....	....	....	....	....	....	....	27
33	5.94	4.48	....	115	125	133	141	149	156	....	....	....	....	....	....	....	30
36	7.07	5.47	....	141	152	163	173	182	191	204	....	....	....	....	....	....	32
39	8.30	6.59	....	....	183	196	208	219	229	245	....	....	....	....	....	....	35
42	9.62	7.76	....	....	216	231	245	258	271	289	316	....	....	....	....	....	38
48	12.57	10.44	....	....	....	311	330	348	365	389	426	....	....	....	....	....	43
54	15.90	13.51	....	....	....	....	427	449	472	503	551	595	....	....	....	....	48
60	19.64	16.98	....	....	....	....	536	565	593	632	692	748	....	....	....	....	54
66	23 76	20.83	....	....	....	....	....	694	728	776	849	918	981	....	....	....	59
72	28.27	25 08	....	....	....	....	....	835	876	934	1023	1105	1181	1253	....	....	64
78	33.18	29.73	....	....	....	....	....	....	1038	1107	1212	1310	1400	1485	1565	....	70
84	33.48	34.76	....	....	....	....	....	....	1214	1291	1418	1531	1637	1736	1830	2005	75
90	44.18	40.19	....	....	....	....	....	....	....	1496	1639	1770	1893	2008	2116	2318	80
96	50.27	46.01	....	....	....	....	....	....	....	1712	1876	2027	2167	2298	2423	2654	86
102	56.75	52.23	....	....	....	....	....	....	....	1944	2130	2300	2459	2609	2750	3012	91
108	63.62	58.83	....	....	....	....	....	....	....	2090	2399	2592	2771	2939	3098	3393	96
114	70.88	65.83	....	....	....	....	....	....	....	....	2685	2900	3100	3288	3456	3797	101
120	78.54	73.22	....	....	....	....	....	....	....	....	2986	3226	3448	3657	3855	4223	107
132	95.03	89.18	....	....	....	....	....	....	....	....	3637	3929	4200	4455	4696	5144	117
144	113.10	106.72	....	....	....	....	....	....	....	....	4352	4701	5026	5331	5618	6155	128

For pounds of coal burned per hour for any given size of chimney, multiply the figures in the table by 5.



INTERIOR VIEW OF BOILER SHOP SHOWING TWELVE BOILERS IN COURSE OF CONSTRUCTION.

These Boilers comprised a portion of order received from Fraser River Lumber Co.

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HAMILTON, ONT.

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